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(71)Applicant : FUJI PHOTO FILM CO LTD

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(72)Inventor : KAWACHI IKUO

(54) IMAGE FORMING MATERIAL

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a positive image forming material for IR laser for direct plate making which is excellent in chemical resistance and printing durability by forming a photosensitive layer containing an alkali soln.-soluble resin having urea bonds in the side chains and a compd. which absorbs light to generate heat on a supporting body.

SOLUTION: A photosensitive layer containing an alkali soln.-soluble resin having urea bonds in the side chains and a compd. which absorbs light to generate heat is formed on a supporting body. In this image forming material, the photosensitive layer preferably further contains an alkali soln.-soluble resin having phenolic hydroxyl groups. In the alkali soln.-soluble resin, the urea bond group itself does not act as the alkali soln. soluble resin. The chemical resistance and strength of the resin after exposed are improved by the characteristics of the urea bond groups in the side chains introduced. Moreover, the urea bond groups do not inhibit solubility of the alkali soln. soluble resin with an alkali aq. soln. (developer).

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CLAIMS

[Claim(s)]

[Claim 1] The image formation ingredient characterized by having the sensitization layer which comes to contain the alkali water-solution fusibility resin which has an urea bond at the (A) side chain, and the compound which absorbs (B) light and generates heat on a base material.

[Claim 2] The image formation ingredient according to claim 1 with which said sensitization layer contains further the alkali water-solution fusibility resin which has the (C) phenolic hydroxyl group.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the positive type image formation ingredient for the infrared laser for the so-called direct platemaking which can be engraved direct from the digital signal of a computer etc. especially about an image formation ingredient usable as an offset-printing master.

[0002]

[Description of the Prior Art] As for development of the laser in recent years, high power and a miniaturization are progressing by especially **** better **, and the solid state laser and semiconductor laser that have a luminescence field in an infrared field from a near infrared ray. Therefore, such laser is very useful as the exposure light source at the time of engraving directly from digital data, such as a computer.

[0003] The charge for infrared laser of a positive type lithography plate which uses the infrared laser which has a luminescence field in the above-mentioned infrared field as the exposure light source is a charge of a lithography plate which uses as an indispensable component the binder resin of alkali water-solution fusibility, IR color which absorbs light and generates heat. If said infrared laser is exposed in this charge for infrared laser of a positive type lithography plate, in a non-exposed area (image section), IR color in this charge for infrared laser of a positive type lithography plate etc. will commit the solubility of this binder resin as a lysis inhibition agent reduced substantially by the interaction with said binder resin. On the other hand, in the exposure section (non-image section), since said IR color etc. absorbs light and generates heat, the interaction of this IR color etc. and said binder resin becomes weak. Therefore, at the time of development, said exposure section (non-image section) dissolves in an alkali developer, and the lithography version is formed. However, in such a charge for infrared laser of a positive type lithography plate, since the soluble high resin to an alkali developer had to be carried out as binder resin compared with the charge of a positive type lithography plate which engraves by UV exposure, there was a problem that chemical resistance in use will be bad and print durability will deteriorate by use of a cleaner.

[0004] Said problem originates in an essential difference of the platemaking mechanism of said following charges for infrared laser of a positive type lithography plate and the charge of a positive type lithography plate which engraves by said UV exposure.

[0005] The charge of a positive type lithography plate which engraves by said UV exposure uses binder resin, and the onium salt and quinone diazide compounds of alkali water-solution fusibility as an indispensable component. Although said onium salt and quinone diazide compounds will act as a lysis inhibition agent in a non-exposed area (image section) similarly in said charge for infrared laser of a positive type lithography plate if the charge of a positive type lithography plate which engraves by this UV exposure is exposed here In the exposure section (non-image section), [on said positive type lithography ingredient for infrared laser], light decomposes, an acid is generated, and it acts as a dissolution accelerator of said binder resin. Therefore, in the charge of a positive type lithography plate which engraves by this UV exposure, it is not necessary to use the soluble high resin to an alkali

developer beforehand as binder resin.

[0006] On the other hand, it sets in said charge for infrared laser of a positive type lithography plate. Although the interaction of IR color etc. and said binder resin becomes weaker, in order that this IR color may not necessarily act as a dissolution accelerator of this binder in the exposure section (non-image section) at the time of exposure, In order to enlarge the soluble difference of a non-exposed area and the exposure section, the soluble high resin to an alkali developer must be beforehand used as binder resin as mentioned above.

[0007]

[Problem(s) to be Solved by the Invention] This invention solves said many problems and makes it a technical problem to attain the following purposes. Namely, this invention aims at offering the positive type image formation ingredient for infrared laser for direct platemaking which is excellent in chemical resistance and print durability.

[0008]

[Means for Solving the Problem] Said The means for solving a technical problem is as follows. That is, it is the image formation ingredient characterized by having the sensitization layer which comes to contain the alkali water-solution fusibility resin which has an urea bond at the (A) side chain, and the compound which absorbs (B) light and generates heat on a base material.

[0009] Moreover, in said image formation ingredient, it is desirable that said sensitization layer contains further the alkali water-solution fusibility resin which has the (C) phenolic hydroxyl group.

[0010] (A) In the alkali water-solution fusibility resin which has an urea bond, this urea bond radical itself does not act on a side chain as an alkali water-solution fusibility radical. Moreover, chemical resistance and reinforcement (degree of hardness) of after [exposure] improve with the property of the urea bond radical of the introduced side chain. Therefore, the solubility over an alkali water solution falls as the whole exposure section (image section). On the other hand, said urea bond radical does not check the solubility to the alkali water solution (developer) of (A) alkali water-solution fusibility resin at the time of development. Therefore, the image formation ingredient which used the alkali water-solution fusibility which has an urea bond for the (A) side chain is excellent in chemical resistance, and is imagined to be that to which print durability does not fall by cleaning, either.

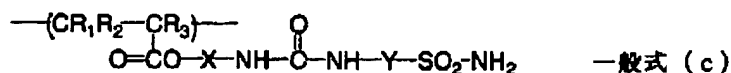
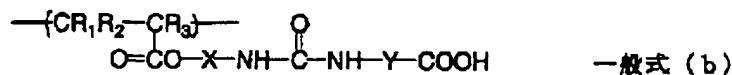
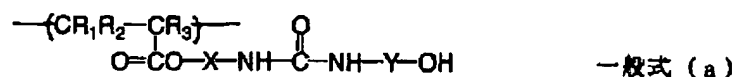
[0011]

[Embodiment of the Invention] - A sensitization layer-sensitization layer comes to contain the alkali water-solution fusibility resin which has an urea bond in the (A) side chain, and the compound which absorbs (B) light and generates heat.

[0012] If it is alkali water-solution fusibility resin which has an urea bond in a side chain as alkali water-solution fusibility resin (" (A) alkali water-solution fusibility resin " may only be called hereafter) which has an urea bond in [alkali water-solution fusibility (A) Resin (A) which has urea bond in side chain] side chain, there is especially no limit and it can use a well-known thing. The novolak resin which has an urea bond is especially mentioned to the high molecular compound of the vinyl polymerization system which has the configuration unit expressed with either of the (c) from the following general formula (a) from a chemical-resistant viewpoint at the time of printing using a printing chemical especially, or a condensation polymerization system, or a side chain suitably. Furthermore, it is desirable from a viewpoint of improvement in sensibility that a functional group which contributes to alkali water-solution fusibility exists in a side chain in addition to an urea bond.

[0013]

[Formula 1]



[0014] Said general formula (a) In - (c), R1 and R2 express a hydrogen atom, a halogen atom, an alkyl group, an aryl group, carboxyl groups, or those salts. R3 expresses a hydrogen atom, a halogen atom, an alkyl group, or an aryl group. An alkylene group or a phenylene group etc. which X may express a divalent connection radical, for example, may have a substituent is mentioned suitably. The phenylene group which Y may express the divalent aromatic series radical which may have a substituent, for example, may have a substituent, or a naphthylene radical is mentioned suitably.

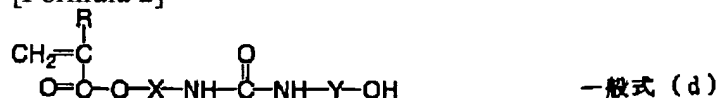
[0015] as the content in (A) alkali water-solution fusibility resin of the configuration unit expressed with either of the (c) from said general formula (a) -- a preparation ratio -- 10 - 80-mol % -- it is desirable that it is the copolymer contained, 15 - 70-mol % is more desirable, and especially 20 - 60-mol % is desirable. When in the case of below 10 mol % said content is lacking in chemical resistance and exceeds 80-mol %, the solubility to an alkali water solution may be low, and may serve as low sensibility.

[0016] As the manufacture approach of a high molecular compound of having the configuration unit expressed with either of the (c) from said general formula (a), there is especially no limit, manufacturing by well-known various approaches is possible, for example, the approach of carrying out the polymerization of the polymerization nature monomer in a solvent using a polymerization initiator etc. is mentioned.

[0017] In the approach of carrying out the polymerization of said polymerization nature monomer in a solvent using a polymerization initiator, it is the monomer which has one or more urea bonds and the unsaturated bond in which one or more polymerizations are possible in 1 molecule as said polymerization nature monomer, for example, the compound expressed with the following general formula (d) is mentioned suitably.

[0018]

[Formula 2]



[0019] In a general formula (d), R expresses a hydrogen atom or an alkyl group. The alkylene group or phenylene group which X may express a divalent connection radical, for example, may have a substituent is mentioned. The phenylene group which Y may express the divalent aromatic series radical which may have a substituent, for example, may have a substituent, or a naphthylene radical is mentioned.

[0020] As a compound expressed with said general formula (d) For example, 1-(N'-(4-hydroxyphenyl) ureido) methyl acrylate, 1-(N'-(3-hydroxyphenyl) ureido) methyl acrylate, 1-(N'-(2-hydroxyphenyl) ureido) methyl acrylate, 1-(N'-(3-hydroxy-4-methylphenyl) ureido) methyl acrylate, 1-(N'-(2-hydroxy-5-methylphenyl) ureido) methyl acrylate, 1-(N'-(5-hydroxy naphthyl) ureido) methyl acrylate, 1-(N'-(2-hydroxy-5-phenyl phenyl) ureido) methyl acrylate, 2-(N'-(4-hydroxyphenyl) ureido) ethyl acrylate, 2-(N'-(3-hydroxyphenyl) ureido) ethyl acrylate, 2-(N'-(2-hydroxyphenyl) ureido) ethyl acrylate, 2-(N'-(3-hydroxy-4-methylphenyl) ureido) ethyl acrylate, 2-(N'-(2-hydroxy-5-methylphenyl) ureido) ethyl acrylate, 2-(N'-(5-hydroxy naphthyl) ureido) ethyl acrylate, 2-(N'-(2-hydroxy-5-phenyl phenyl) ureido) ethyl acrylate, 4-(N'-(4-hydroxyphenyl) ureido) butyl acrylate, 4-(N'-(3-hydroxyphenyl) ureido) butyl

acrylate, 4-(N'-(2-hydroxyphenyl) ureido) butyl acrylate, 4-(N'-(3-hydroxy-4-methylphenyl) ureido) butyl acrylate, 4-(N'-(2-hydroxy-5-methylphenyl) ureido) butyl acrylate, 4-(N'-(5-hydroxy naphthyl) ureido) butyl acrylate, The acrylate derivative like 4-(N'-(2-hydroxy-5-phenyl phenyl) ureido) butyl acrylate : 1-(N'-(4-hydroxyphenyl) ureido) methyl methacrylate, 1-(N'-(3-hydroxyphenyl) ureido) methyl methacrylate, 1-(N'-(2-hydroxyphenyl) ureido) methyl methacrylate, 1-(N'-(3-hydroxy-4-methylphenyl) ureido) methyl methacrylate, 1-(N'-(2-hydroxy-5-methylphenyl) ureido) methyl methacrylate, 1-(N'-(5-hydroxy naphthyl) ureido) methyl methacrylate, 1-(N'-(2-hydroxy-5-phenyl phenyl) ureido) methyl methacrylate, 2-(N'-(4-hydroxyphenyl) ureido) ethyl methacrylate, 2-(N'-(3-hydroxyphenyl) ureido) ethyl methacrylate, 2-(N'-(2-hydroxyphenyl) ureido) ethyl methacrylate, 2-(N'-(3-hydroxy-4-methylphenyl) ureido) ethyl methacrylate, 2-(N'-(2-hydroxy-5-methylphenyl) ureido) ethyl methacrylate, 2-(N'-(5-hydroxy naphthyl) ureido) ethyl methacrylate, 2-(N'-(2-hydroxy-5-phenyl phenyl) ureido) ethyl methacrylate, 4-(N'-(4-hydroxyphenyl) ureido) butyl methacrylate, 4-(N'-(3-hydroxyphenyl) ureido) butyl methacrylate, 4-(N'-(2-hydroxyphenyl) ureido) butyl methacrylate, 4-(N'-(3-hydroxy-4-methylphenyl) ureido) butyl methacrylate, 4-(N'-(2-hydroxy-5-methylphenyl) ureido) butyl methacrylate, A methacrylate derivative like 4-(N'-(5-hydroxy naphthyl) ureido) butyl methacrylate and 4-(N'-(2-hydroxy-5-phenyl phenyl) ureido) butyl methacrylate etc. is mentioned.

These may be used by the one-sort independent and may use two or more sorts together.

[0021] Since said polymerization nature monomer has characteristic absorption in 1600-1700cm⁻¹ of the infrared absorption spectrum based on an urea bond, it can be identified by measurement of an infrared absorption spectrum. Moreover, the identification in the melting point, Proton NMR, etc. is also possible. For example, among the above-mentioned example, the melting point is 131-133 degrees C, and 2-(N'-(4-hydroxyphenyl) ureido) ethyl methacrylate can be identified from the absorption of an IR spectrum based on a hydroxyl group and said urea bond.

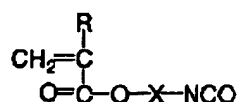
[0022] Besides the compound expressed with said general formula (d), moreover, for example, 2-(N'-(4-carboxyl phenyl) ureido) ethyl acrylate, 2-(N'-(4-sulfamoyl phenyl) ureido) ethyl acrylate, 2-(N'-(4-sulfophenyl) ureido) ethyl acrylate, The acrylate which has acidic groups, such as 2-(N'-(4-phosphono phenyl) ureido) ethyl acrylate : 2-(N'-(4-carboxyl phenyl) ureido) ethyl methacrylate, 2-(N'-(4-sulfamoyl phenyl) ureido) ethyl methacrylate, 2-(N'-(4-sulfophenyl) ureido) ethyl methacrylate, The methacrylate which has acidic groups, such as 2-(N'-(4-phosphono phenyl) ureido) ethyl methacrylate : 2-(N'-methyl ureido) ethyl acrylate, 2-(N'-propyl ureido) ethyl acrylate, 2-(N'-phenyl ureido) ethyl acrylate, 2-(N'-(4-methylphenyl) ureido) ethyl acrylate, 2-(N'-(2-methylphenyl) ureido) ethyl acrylate, The acrylate: 2-(N'-methyl ureido) ethyl methacrylate which does not have acidic groups, such as 2-(N'-naphthyl ureido) ethyl acrylate and 2-(N'-(2-phenyl phenyl) ureido) ethyl acrylate, 2-(N'-propyl ureido) ethyl methacrylate, 2-(N'-phenyl ureido) ethyl methacrylate, 2-(N'-(4-methylphenyl) ureido) ethyl methacrylate, 2-(N'-(2-methylphenyl) ureido) ethyl methacrylate, Polymerization nature monomers, such as methacrylate which does not have acidic groups, such as 2-(N'-naphthyl ureido) ethyl methacrylate and 2-(N'-(2-phenyl phenyl) ureido) ethyl methacrylate, are mentioned preferably.

[0023] Among the above-mentioned example, decomposition temperature is 220 degrees C and 2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate can be identified from the absorption of an IR spectrum based on a carboxyl group and said urea bond.

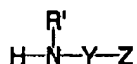
[0024] About the manufacture approach of said polymerization nature monomer, the well-known manufacture approach to which the isocyanate compound which especially a limit does not have, for example, is expressed with the following general formula (e), and the amine compound expressed with the following general formula (f) are made to react is mentioned suitably.

[0025]

[Formula 3]



一般式 (e)



一般式 (f)

[0026] In a general formula (e), R expresses a hydrogen atom or an alkyl group. X is the same as that of said general formula (d). In a general formula (f), R' expresses the alkyl group which may have a hydrogen atom or a substituent. Y is the same as that of said general formula (d). Z expresses a hydroxyl group, a carboxyl group, or a sulfonamide radical.

[0027] In said manufacture approach, the polymerization nature monomer expressed with said general formula (d) can be suitably obtained by using the compound of said general formula (e), and the compound whose Z is a hydroxyl group and whose R' is a hydrogen atom in said general formula (f).

[0028] In said manufacture approach, since the amino group in a general formula (f) has the high activity over an isocyanate radical compared with a hydroxyl group, a carboxyl group, or a -NH-CO-radical, a heavy composition monomer which is easily expressed with said general formula (d) can be obtained. Moreover, a reaction can be more effectively advanced by making superfluous the amine compound expressed with said general formula (f) by request, and adding the isocyanate compound gradually expressed with said general formula (e) to this.

[0029] Although there will be especially no limit if it is a well-known organic solvent as said solvent, what does not have an active hydrogen atom is mentioned suitably. For example, ethylene dichloride, a cyclohexanone, a methyl ethyl ketone, An acetone, a methanol, ethanol, ethylene glycol monomethyl ether, Ethylene glycol monoethyl ether, 2-methoxy ethyl acetate, 1-methoxy-2-propanol, 1-ethoxy-2-propanol, 1-methoxy-2-propanol acetate, 1-methoxy-2-propyl acetate, 1-ethoxy-2-propyl acetate, dimethyl sulfoxide, toluene, ethyl acetate, methyl lactate, ethyl lactate, dioxane, etc. are mentioned. These may be used by the one-sort independent and may use two or more sorts together.

[0030] It is usually 15 minutes - 24 hours that what is necessary is just to carry out until the isocyanate compound expressed with said general formula (e) is lost as time amount of said reaction, or until the amount of an urea bond turns into a constant rate. Moreover, as temperature of said reaction, 0-40 degrees C is desirable.

[0031] Said polymerization nature monomer is the purpose which removes the unreacted raw material component and unreacted by-product at the time of making it react by the superfluous system of an amine compound expressed with said general formula (f), and after it makes a salt the amine compound which neutralizes with acid compounds, such as dilute hydrochloric acid, and is expressed with a general formula (f) by request, it can be made into a high grade rinsing, filtration, and by carrying out a vacuum drying.

[0032] Although the alkali water-solution fusibility resin (aforementioned [A]) may be the homopolymer of each polymerization nature monomer or two or more sorts of copolymers including said urea bond, it is desirable from a viewpoint of print durability that it is a copolymer with the compound which has the unsaturated bond in which one or more polymerizations are possible, and does not include an urea bond. As this copolymer, you may be which structures, such as a block object, a random object, or a graft object.

[0033] 100-mol% of the total quantity with the compound which said copolymer has the unsaturated bond in which said polymerization nature monomer and one or more polymerizations are possible, and does not include an urea bond -- receiving -- said polymerization nature monomer -- 10-80-mol % -- what uses and carried out copolymerization is desirable.

[0034] As a compound which has the unsaturated bond in which said one or more polymerizations are possible, and does not include an urea bond For example, a methyl acrylate, an ethyl acrylate, acrylic-

acid propyl, Butyl acrylate, acrylic-acid amyl, acrylic-acid ethylhexyl, Acrylic-acid octyl, acrylic-acid-t-octyl, chloro ethyl acrylate, 2 and 2-dimethyl hydroxypropyl acrylate, 5-hydroxy pentyl acrylate, Trimethylol propane monoacrylate, pentaerythritol monoacrylate, Glycidyl acrylate, benzyl acrylate, methoxybenzyl acrylate, The acrylic ester like tetrahydro acrylate : Phenyl acrylate, The aryl acrylate like furfuryl acrylate : Methyl methacrylate, Ethyl methacrylate, propyl methacrylate, isopropyl methacrylate, Amyl methacrylate hexyl methacrylate, cyclohexyl methacrylate, Benzyl methacrylate, chloro benzyl methacrylate, octyl methacrylate, 4-hydroxy butyl methacrylate, 5-hydroxy pentyl methacrylate, 2 and 2-dimethyl-3-hydroxypropyl methacrylate, trimethylol propane mono-methacrylate, Pentaerythritol mono-methacrylate, glycidyl methacrylate, The methacrylic ester like furfuryl methacrylate and tetrahydrofurfuryl methacrylate : Phenyl methacrylate, As acrylamide or its derivative, The aryl methacrylate like cresyl methacrylate and naphthyl methacrylate : N-methylacrylamide, N-ethyl acrylamide, N-propyl acrylamide, N-butyl acrylamide, N-t-butyl acrylamide, N-heptyl acrylamide, N-octyl acrylamide, N-cyclohexyl acrylamide, the N-alkyl acrylamide: N-phenyl acrylamide like N-benzyl acrylamide, N-tolyl acrylamide, N-nitrophenyl acrylamide, N-naphthyl acrylamide, N-aryl acrylamides like N-hydroxyphenyl acrylamide : N,N-dimethylacrylamide, N and N-diethyl acrylamide, N, and N-dibutyl acrylamide, N and N-dibutyl acrylamide, N, and N-diisobutyl acrylamide, N and N-diethyl hexyl acrylamide, N, N, N like N-dicyclohexyl acrylamide - Dialkyl acrylamide: N-methyl-N-phenyl acrylamide, As methacrylamide or its derivative, N like N-hydroxyethyl-N-methylacrylamide and N-2-acetamidoethyl-N-acetyl acrylamide, and N-aryl acrylamides : N-methyl methacrylamide, N-ethyl methacrylamide, N-propyl methacrylamide, N-butyl methacrylamide, N-t-butyl methacrylamide, N-ethylhexyl methacrylamide, N-HIDORIKISHI ethyl methacrylamide, N-alkyl methacrylamide like N-cyclohexyl methacrylamide : N-phenyl methacrylamide, N-aryl methacrylamide like N-naphthyl methacrylamide : N and N-diethyl methacrylamide, N and N-dipropyl methacrylamide, N, N like N-dibutyl methacrylamide, N-dialkyl methacrylamide: N, N, N like N-diphenyl methacrylamide - Diaryl methacrylamide: N-hydroxyethyl-N-methyl methacrylamide, The methacrylamide derivative like N-methyl-N-phenyl methacrylamide and N-ethyl-N-phenyl methacrylamide : An acetic-acid allyl compound, Allyl caproate, a caprylic-acid allyl compound, a lauric-acid allyl compound, a PAL thymine acid allyl compound, A stearin acid allyl compound, allyl benzoate, an acetoacetic-acid allyl compound, a lactic-acid allyl compound, The allyl compounds like allyloxy ethanol : Hexyl vinyl ether, Octyl vinyl ether, dodecyl vinyl ether, ethylhexyl vinyl ether, Methoxy ethyl vinyl ether, ethoxyethyl vinyl ether, chloro ethyl vinyl ether, The 1-methyl -2, 2-dimethyl propyl vinyl ether, 2-ethyl butyl vinyl ether, Hydroxyethyl vinyl ether, diethylene-glycol vinyl ether, Dimethylaminoethyl vinyl ether, diethylamino ethyl vinyl ether, Butylamino ethyl vinyl ether, benzyl vinyl ether, tetrahydrofurfuryl vinyl ether, Vinyl phenyl ether, the vinyl tolyl ether, the vinyl chlorophenyl ether, Vinyl -2, 4-dichlorophenyl ether, the vinyl naphthyl ether, The vinyl ether like the vinyl anthranil ether : Vinyl butyrate, Vinyl iso butyrate, vinyl trimethyl acetate, vinyl diethyl acetate, Vinyl BARETO, vinyl caproate, vinyl chloro acetate, vinyl methoxy acetate, Vinyl butoxy acetate, vinyl phenyl acetate, vinyl acetoacetate, Vinyl lactate, vinyl-beta-phenyl butyrate, vinyl cyclohexyl carboxylate, Benzoic-acid vinyl, salicylic-acid vinyl, chloro benzoic-acid vinyl, tetra-chloro benzoic-acid vinyl, The vinyl ester like naphthoic-acid vinyl : Methyl styrene, dimethyl styrene, Trimethyl styrene, ethyl styrene, diethyl styrene, isopropyl styrene, Butyl styrene, hexyl styrene, cyclohexyl styrene, dodecyl styrene, benzyl styrene, chloro methyl styrene, trifluoro methyl styrene, ethoxy methyl styrene, acetoxy methyl styrene, methoxy styrene, 4-methoxy-3-methyl Styrene, dimethoxy styrene, chloro styrene, dichloro styrene, TORIKURORO styrene, tetra-chloro styrene, PENTA chloro styrene, Bromostyrene, dibromo styrene, iodine styrene, fluoro styrene, The styrene like 2-BUROMO-4-trifluoro methyl styrene and 4-fluoro-3-trifluoro methyl styrene : Crotonic-acid butyl, Crotonic-acid hexyl, a crotonic acid, and the crotonic-acid ester like glycerol mono-crotonate : Dimethyl itaconate, Itaconic-acid diethyl and the itaconic-acid dialkyls like dibutyl itaconate : Dimethylmalate, The dialkyls of the maleic acid like dibutylfumarate, or boletic acid : Maleimide, N-phenyl maleimide, N-2-methylphenyl maleimide, N-2, 6-diethyl phenyl maleimide, N-2-chlorophenyl maleimide, N-cyclohexyl maleimide, The maleimide like N-lauryl maleimide and N-hydroxyphenyl maleimide: In addition to this, N-vinyl pyrrolidone, N-vinylpyridine, acrylonitrile, a

methacrylonitrile, etc. are mentioned. These compounds may be used by the one-sort independent, and may use two or more sorts together.

[0035] Acrylic ester (meta), acrylamides (meta), maleimide, and especially acrylonitrile (meta) are desirable among these compounds.

[0036] In addition, in this specification, the publication called acrylate (meta) shall mean acrylate and methacrylate, and the publication called the acrylic acid (meta) shall mean an acrylic acid and a methacrylic acid. Moreover, the publication called acrylonitrile (meta) shall mean acrylonitrile and a methacrylonitrile, and acrylamide (meta) shall mean acrylamide and methacrylamide.

[0037] As molecular weight of said copolymer, in weight average molecular weight, 2000 or more are desirable and 3000-500,000 are more desirable. Moreover, in number average molecular weight, 1000 or more are desirable and 2000-400,000 are more desirable.

[0038] As for said sensitization layer, it is desirable to contain further the alkali water-solution fusibility resin (for "(C) resin which has a phenolic hydroxyl group" to be called hereafter) which has the (C) phenolic hydroxyl group.

[0039] (C) As a compounding ratio (resin which has the (C) phenolic hydroxyl group: (A) alkali water-solution fusibility resin) to (A) alkali water-solution fusibility resin of the resin which has a phenolic hydroxyl group, it is a weight ratio, and 1:10-10:1 are desirable and 1:5-5:1 are more desirable. When said compounding ratio does not fulfill said numerical range, while an interaction with the resin which has said phenolic hydroxyl group may not be enough and development latitude may fall, when said compounding ratio exceeds said numerical range, the chemical resistance of said sensitization layer may become scarce.

[0040] (C) As resin which has a phenolic hydroxyl group, novolak resin, such as phenol formaldehyde resin, m-cresol formaldehyde resin, p-cresol formaldehyde resin, m-/p-mixing cresol formaldehyde resin, and a phenol / cresol (any of m-, p-, or m-/p-mixing are sufficient) mixing formaldehyde resins, etc. is mentioned, for example.

[0041] (C) As molecular weight of the resin which has a phenolic hydroxyl group, 200-10000 are [in weight average molecular weight] desirable at 500-20000, and number average molecular weight.

[0042] Moreover, the condensate of the phenol and formaldehyde which have as substituents the alkyl group of the carbon numbers 3-8 of t-butylphenol formaldehyde resins indicated by the U.S. Pat. No. 4123279 specification, octyl phenol formaldehyde resins, etc. may be used together. The resin which has these phenolic hydroxyl groups may be used by the one-sort independent, and may use two or more sorts together.

[0043] As a compound which absorbs [(B) Compound (B) which absorbs light and generates heat] light, and generates heat, well-known various pigments, colors, etc. are mentioned suitably. As said pigment, the pigment indicated by a commercial pigment and a Color Index (C. I.) handbook, the "newest pigment handbook" (volume for Japanese pigment American Institute of Technology, 1977 annual publications), the "newest pigment applied technology" (CMC publication, 1986 annual publications), "printing ink technical" CMC publication, and 1984 annual publications is mentioned.

[0044] As a class of said pigment, a black pigment, a yellow pigment, an orange pigment, brown pigments, red pigments, a purple pigment, a blue pigment, green pigments, a fluorescent pigment, a metallic flake pigment, and other polymer joint coloring matter are mentioned. Specifically, insoluble azo pigment, an azo lake pigment, a disazo condensation pigment, a chelate azo pigment, phthalocyanine pigment, an anthraquinone system pigment, perylene and a peri non system pigment, a thioindigo system pigment, the Quinacridone system pigment, a dioxazine system pigment, an isoindolinone system pigment, a kino FUTARON system pigment, a blue-and-white porcelain lake pigment, an azine pigment, a nitroso pigment, a nitro pigment, a natural pigment, a fluorescent pigment, an inorganic pigment, carbon black, etc. are mentioned.

[0045] Said pigment may be used without carrying out surface treatment, may perform surface treatment and may be used. To the approach of this surface treatment, the approach of carrying out the surface coat of resin or the wax, the approach to which a surfactant is made to adhere, the method of combining the active substance (for example, a silane coupling agent, an epoxy compound, poly isocyanate, etc.) with a

pigment front face, etc. can be considered. Said surface treatment approach is indicated by "the property of metallic soap, application" (Saiwai Shobo), the "printing ink technique" (CMC publication, 1984 annual publications), and the "newest pigment applied technology" (CMC publication, 1986 annual publications).

[0046] As a particle size of said pigment, 0.01-10 micrometers is desirable, 0.05-1 micrometer is more desirable, and especially 0.1-1 micrometer is desirable. When the particle size of said pigment is not sometimes desirable in respect of the stability in the inside of the sensitization layer coating liquid of a distributed object in the case of less than 0.01 micrometers and it exceeds 10 micrometers on the other hand, it is not desirable in respect of the homogeneity of a sensitization layer.

[0047] As an approach of distributing said pigment, the well-known distributed technique used for ink manufacture, toner manufacture, etc. can be used. Dispersers, such as an ultrasonic distribution machine, a sand mill, attritor, a pearl mill, a super mill, a ball mill, an impeller, DESUPAZA, KD mill, a colloid mill, a dynatron, 3 roll mills, and a pressurized kneader, are used for said distribution. For details, it is indicated by the "newest pigment applied technology" (CMC publication, 1986 annual publications).

[0048] As said color, the well-known thing indicated by a commercial color and commercial reference (for example, "color handbook" Society of Synthetic Organic Chemistry, Japan edit, Showa 45 annual publications) is mentioned, for example, colors, such as azo dye, metallic complex azo dye, pyrazolone azo dye, anthraquinone dye, phthalocyanine dye, a carbonium color, a quinonimine dye, methine dye, and cyanine dye, are mentioned. Said pigment, or the pigment and color which absorbs infrared light or near-infrared light among colors is the point of being suitable for use with the laser which emits light in infrared light or near-infrared light, and is especially desirable.

[0049] As a pigment which absorbs said infrared light or near-infrared light, carbon black is used suitably. moreover, as a color which absorbs said infrared light or near-infrared light For example, JP,58-125246,A, JP,59-84356,A, JP,59-202829,A, Cyanine dye, JP,58-173696,A which are indicated by JP,60-78787,A etc., The methine dye indicated by JP,58-181690,A, JP,58-194595,A, etc., JP,58-112793,A, JP,58-224793,A, JP,59-48187,A, The naphthoquinone color indicated by JP,59-73996,A, JP,60-52940,A, JP,60-63744,A, etc., Cyanine dye the SUKUWARIRIUMU coloring matter indicated by JP,58-112792,A etc. and given in British JP,434,875,B etc. can be mentioned.

[0050] Moreover, as said color, a near-infrared absorption sensitizer given in U.S. Pat. No. 5,156,938 is also used suitably. Moreover, the arylbenzo(thio)pyrylium salt by which the U.S. Pat. No. 3,881,924 publication was permuted, TORIMECHIN thia pyrylium salt given in JP,57-142645,A (U.S. Pat. No. 4,327,169), JP,58-181051,A, 58-220143, 59-41363, 59-84248, 59-84249, 59-146063, The pyrylium system compound indicated by 59-146061, cyanine dye given in JP,59-216146,A, Pentamethine thio pyrylium salt etc. and JP,5-13514,B given in U.S. Pat. No. 4,283,475, The pyrylium compound currently indicated by the 5-19702 official report, Epolight III-178, EpolightIII-130, Epolight III-125, EpolightV-176A, etc. are used especially preferably.

[0051] moreover, the near-infrared absorption color which is indicated by the formula (I) as another desirable example as said color, and is especially indicated by the U.S. Pat. No. 4,756,993 detail in the letter as (II) is mentioned. As an addition of said pigment or a color, 0.01 - 50 % of the weight is desirable to the charge total solids of a printing plate, and 0.1 - 10 % of the weight is more desirable. Especially in the case of said color, 0.5 - 10 % of the weight is desirable, and especially when it is a pigment, to it, 3.1 - 10 % of the weight is desirable. While sensibility may become low, when the addition of said pigment or a color exceeds 50 % of the weight to less than 0.01% of the weight of a case, the homogeneity of a sensitization layer is lost and the endurance of a recording layer may worsen.

[0052] You may add in the same layer as other components, and said color or pigment may be added in another layer. When adding in a layer different from other components, it is desirable to add in the layer containing the matter to which the solubility of binding resin is substantially reduced in the condition of being pyrolysis nature and not decomposing, and the layer which adjoins. Moreover, it may be contained in another layer although being contained in the same layer is desirable as for said color or pigment, and binding resin.

[0053] The [other component] aforementioned sensitization layer can be made to contain other components by request. As a component of said others, various additives are mentioned, as such an additive, it is pyrolysis nature, such as an onium salt, o-quinone diazide compound, an aromatic series sulfone compound, and an aromatic series sulfonate compound, for example, and the matter to which the solubility of (A) alkali water-solution fusibility resin is reduced substantially is mentioned in the condition of not decomposing. If said additive is added, improvement in the lysis inhibition nature to the developer of the image section can be aimed at.

[0054] As said onium salt, diazonium salt, ammonium salt, phosphonium salt, iodonium salt, sulfonium salt, a seleno NIUMU salt, arsonium salt, etc. are mentioned.

[0055] As said onium salt, for example S.I.Schlesinger, Photogr.Sci.Eng., 18, 387 (1974), T.S.Bal et al, Polymer, 21, and 423 (1980), Diazonium salt given in JP,5-158230,A, U.S. Pat. No. 4,069,055, said -- 4,069,056 ammonium salt given in the specification of a number and JP,3-140140,A -- D.C.Necker et al, Macromolecules, 17, 2468 (1984), C.S.Wen et al, Teh, Proc.Conf.Rad.Curing ASIA, p478 Tokyo, and Oct (1988), U.S. Pat. No. 4,069,055 -- said -- 4,069,056 phosphonium salt given in a number -- J.V.Crivello et al, Macromolecules, 10 (6), 1307 (1977), Chem.& Eng.News, Nov.28, and p31 (1988), the Europe patent No. 104,143 and U.S. Pat. No. 339,049 -- said -- the 410,201st a number -- Iodonium salt given in JP,2-150848,A and JP,2-296514,A, J.V.Crivello et al, Polymer J.17, and 73 (1985), J.V.Crivello et al.J.Org.Chem., 43, and 3055 (1978), W.R.Watt et al, J.Polymer Sci., Polymer Chem.Ed., 22, and 1789 (1984), J. V.Crivello et al, Polymer Bull., 14, and 279 (1985), J.V.Crivello et al, Macromolecules, and 14 (5) 1141 (1981), J.V.Crivello et al, J.Polymer Sci., PolymerChem.Ed., 17, and 2877 (1979), Europe patent 370,693rd a number -- said -- 233,567 a number -- said -- 297,443 a number -- said -- 297,442 a number and U.S. Pat. No. 4,933,377 -- said -- 3,902,114 a number -- said -- No. 410,201 -- said -- 339,049 a number -- said -- 4,760,013 a number -- said -- 4,734,444 a number -- said -- 2,833,827 A number and German country patent 2,904,626th a number -- said -- 3,604,580 a number -- said -- 3,604,581 sulfonium salt given in a number -- J.V.Crivello et al, Macromolecules, 10 (6), 1307 (1977), J.V.Crivello et al, J.Polymer Sci., Polymer Chem.Ed., 17, and 1047 (1979) The seleno NIUMU salt of a publication, The arsonium salt of a publication etc. is suitably mentioned to C.S.Wen et al, Teh, Proc.Conf.Rad.Curing ASIA, p478 Tokyo, and Oct (1988). Also in these, especially diazonium salt is desirable and the thing of a publication is desirable to JP,5-158230,A as this diazonium salt.

[0056] As said o-quinone diazide compound, it is the compound which has one or more o-quinone diazide radicals, and if alkali fusibility is increased by the pyrolysis, the compound of various structures will be mentioned suitably. Since said o-quinone diazide has the effectiveness of the both sides of the effectiveness of making the dissolution control ability of a binder losing by the pyrolysis, and the effectiveness that o-quinone diazide itself changes to the matter of alkali fusibility, it can act as a dissolution accelerator of a binder.

[0057] as said o-quinone diazide compound -- for example, J. Koser work "light-sensitive systems" (John Wiley & Sons.Inc.) -- the compound of a publication is mentioned [page / 339-352nd], and various aromatic series polyhydroxy compounds or the aromatic series amino compound, the sulfonate of o-quinone diazide made to react, or a sulfonic-acid amide is especially suitable. moreover, the ester of benzoquinone (1 2)-diazido sulfonic-acid chloride or naphthoquinone-(1 2)-diazido-5-sulfonic-acid chloride, and pyrogallol-acetone resin which are indicated by JP,43-28403,B and U.S. Pat. No. 3,046,120 -- and -- said -- the 3,188,210th The ester of the benzoquinone-(1 2)-diazido sulfonic-acid chloride or naphthoquinone-(1 2)-diazido-5-sulfonic-acid chloride, and phenol-formaldehyde resin which are indicated by the number is also mentioned suitably.

[0058] Furthermore, naphthoquinone -(1 2)- Ester with diazido-4-sulfonic-acid chloride, phenol formaldehyde resin, or cresol formaldehyde resin, naphthoquinone -(1 2)- The ester of diazido-4-sulfonic-acid chloride and pyrogallol-acetone resin is mentioned suitably similarly. As other useful o-quinone diazide compounds, it is reported to much patents and known. For example, JP,47-5303,A, JP,48-63802,A, JP,48-63803,A, JP,48-96575,A, JP,49-38701,A, JP,48-13354,A, JP,41-11222,B, JP,45-9610,B, JP,49-17481,B, U.S. Pat. No. 2,797,213 -- said -- the 3,454,400th a number -- said -- the 3,544,323rd a number -- said -- the 3,573,917th a number -- said -- the 3,674,495th a number -- said --

the 3,785,825th A number and British patent 1,227,602nd a number -- said -- the 1,251,345th a number -- said -- the 1,267,005th a number -- said -- the 1,329,888th a number -- said -- the 1,330,932nd A number and German patent 854,890th What is indicated by each detail in the letter, such as a number, is mentioned. These compounds may be used by the one-sort independent, and may use two or more sorts together.

[0059] As an addition of said o-quinone diazide compound, 1 - 50 % of the weight is desirable to the charge total solids of a printing plate, 5 - 30 % of the weight is more desirable, and especially 10 - 30 % of the weight is desirable.

[0060] As a counter ion of said onium salt, 4 boric-acid fluoride, a 6 phosphorus-fluoride acid, A triisopropyl naphthalene sulfonic acid, 5-nitro-o-toluenesulfonic acid, 5-sulfosalicylic acid, 2, 5-dimethylbenzene sulfonic acid, 2 and 4, 6-trimethyl benzenesulfonic acid, 2-nitrobenzene sulfonic acid, 3-chlorobenzene sulfonic acid, 3-bromobenzene sulfonic acid, 2-fluoro capryl lactam naphthalene sulfonic acid, dodecylbenzenesulfonic acid, a 1-naphthol-5-sulfonic acid, 2-methoxy-4-hydroxy-5-benzoyl-benzenesulfonic acid, Para toluenesulfonic acid, etc. can be mentioned. The alkyl aromatic series sulfonic acid like a 6 phosphorus-fluoride acid, a triisopropyl naphthalene sulfonic acid, or 2 and 5-dimethylbenzene sulfonic acid is suitably mentioned also especially in these.

[0061] As an addition of additives other than said o-quinone diazide compound, 1 - 50 % of the weight is desirable, 5 - 30 % of the weight is more desirable, and especially 10 - 30 % of the weight is desirable. As for said additive and binder, it is desirable to make it contain to the same layer.

[0062] Furthermore, a cyclic anhydride, phenols, and organic acids can also be added in order to raise sensibility. As said cyclic anhydride, phthalic anhydride [which is indicated by the U.S. Pat. No. 4,115,128 specification], tetrahydro phthalic anhydride, hexahydro phthalic anhydride, 3, and 6- and oxy--delta4-tetrahydro phthalic anhydride, tetra-KURORU phthalic anhydride, a maleic anhydride, the Krol maleic anhydride, alpha-phenyl maleic anhydride, a succinic anhydride, pyromellitic dianhydride, etc. are mentioned. as said phenols -- bisphenol A, p-nitrophenol, a p-ethoxy phenol, 2 and 4, a 4'-trihydroxy benzophenone, 2 and 3, 4-trihydroxy benzophenone, a 4-hydroxy benzophenone, 4, 4', and 4"- trihydroxy triphenylmethane color, 4, 4', 3", 4"- tetra--- hydroxy one - a 3, 5, 3', and 5'-tetramethyl triphenylmethane color etc. is mentioned. said opportunity -- it is indicated by JP,60-88942,A, JP,2-96755,A, etc. as acids -- There are sulfonic acids, sulfinic acids, alkyl sulfuric acid, phosphonic acid, phosphoric ester, and carboxylic acids. Specifically P-toluenesulfonic acid, dodecylbenzenesulfonic acid, p-toluene sulfinic acid, Ethyl sulfuric acid, phenylphosphonic acid, phenyl phosphinic acid, phosphoric-acid phenyl, Phosphoric-acid diphenyl, a benzoic acid, isophthalic acid, an adipic acid, para toluylic acid, 3, 4-dimethoxy benzoic acid, a phthalic acid, a terephthalic acid, the 4-cyclohexene -1, 2-dicarboxylic acid, an erucic acid, a lauric acid, an n undecane acid, an ascorbic acid, etc. are mentioned. As a rate of occupying in the charge of a printing plate of said cyclic anhydride, phenols, or organic acids, 0.05 - 20 % of the weight is desirable, 0.1 - 15 % of the weight is more desirable, and especially 0.1 - 10 % of the weight is desirable.

[0063] In order to raise spreading nature, a surfactant, for example, a fluorochemical surfactant given in JP,62-170950,A etc., can be made to contain in said sensitization layer. As a content of this surfactant, said 0.01 - 1% of the weight of image formation ingredient is desirable, and 0.05 - 0.5 % of the weight is more desirable.

[0064] After the image formation ingredient of this invention dissolves said each component in a solvent, it is applied and formed on the below-mentioned base material.

[0065] - Base material - As said base material, a tabular object stable in dimension is desirable. for example, paper and plastics (for example, polyethylene and polypropylene --) the paper which polystyrene etc. laminated, and a metal plate (for example, aluminum --) plastic film (for example, diacetyl cellulose --), such as zinc and copper A cellulose triacetate, cellulose propionate, a butanoic acid cellulose, a cellulose acetate butyrate, The paper in which the metal like the above, such as a cellulose nitrate, polyethylene terephthalate, polyethylene, polystyrene, polypropylene, a polycarbonate, and a polyvinyl acetal, was laminated or vapor-deposited, or plastic film is contained.

[0066] As said base material, polyester film or an aluminum plate is desirable, also in it, dimensional

stability is good and especially a comparatively cheap aluminum plate has it. [desirable] A suitable aluminum plate may be an alloy plate which uses a pure aluminium plate and aluminum as a principal component, and contains the different element of a minute amount, and the plastic film with which aluminum was laminated or vapor-deposited further is sufficient as it. There are silicon, iron, manganese, copper, magnesium, chromium, zinc, a bismuth, nickel, titanium, etc. in the different element contained in an aluminium alloy. The content of the different element in an alloy is at most 10 or less % of the weight. As an aluminum plate, although pure aluminium is desirable, since manufacture on a refinement technique is difficult for completely pure aluminum, a different element may be contained slightly. Thus, the presentation is not specified and the aluminum plate of the material of well-known official business can be conventionally used for an aluminum plate suitably. As thickness of said aluminum plate, about about 0.1-0.6mm is desirable, 0.15-0.4mm is more desirable, and especially 0.2-0.3mm is desirable.

[0067] It precedes carrying out surface roughening of said aluminum plate, and cleaning processing by the surfactant, the organic solvent, or the alkaline water solution in order for a request to remove surface rolling oil is performed. Although the surface roughening process of the front face of an aluminum plate is performed by various approaches, it is performed by the approach of carrying out surface roughening mechanically, for example, the approach of carrying out dissolution surface roughening of the front face electrochemically, and the approach of carrying out selective dissolution of the front face chemically. As the mechanical approach, well-known approaches, such as the ball grinding method, a brushing method, the blasting grinding method, and buffing, can be used. Moreover, there is the approach of performing according to an alternating current or a direct current in a hydrochloric acid or the nitric-acid electrolytic solution as an electrochemical surface roughening method. Moreover, the approach which combined both as indicated by JP,54-63902,A can also be used.

[0068] Thus, anodizing is performed in order that the aluminum plate by which surface roughening was carried out may raise surface water retention and abrasion resistance by request, after alkali-etching-processing and neutralization processing if needed. As an electrolyte used for anodizing of an aluminum plate, use of the various electrolytes which form a porosity oxide film is possible, and, generally a sulfuric acid, a phosphoric acid, oxalic acid, chromic acids, or those mixed acids are used. The concentration of those electrolytes is suitably decided according to an electrolytic class.

[0069] Although it cannot generally specify since it changes as conditions for said anodizing with electrolytes to be used, it is desirable that 5 - 60 A/dm² and an electrical potential difference are [electrolytic concentration / a 1 - 80 % of the weight solution and solution temperature / 1-100V, and electrolysis time amount] generally 10 seconds - 5 minutes for 5-70 degrees C and current density. The amount of an anodic oxide film by said anodic oxidation has two or more desirable 1.0 g/m. When the amount of said anodic oxide film has inadequate print durability in less than two 1.0 g/m or uses for it as a lithography version, it becomes easy to produce the so-called "blemish dirt" with which a blemish becomes easy to stick to the non-image section with, and ink adheres to the part of a blemish at the time of printing.

[0070] After said anodizing is performed, as for the front face of said aluminum, hydrophilization processing is performed as occasion demands. as the approach of this hydrophilization processing -- U.S. Pat. No. 2,714,066 -- said -- the 3,181,461st A number and the 3,280,734th A number and the 3,902,734th alkali-metal silicate (for example, sodium-silicate water solution) which is indicated by the number -- law is mentioned. or [that immersion processing of the base material is carried out in a sodium-silicate water solution in this approach] -- or electrolysis processing is carried out. the fluoride zirconic acid potassium currently otherwise indicated by JP,36-22063,B and U.S. Pat. No. 3,276,868 -- said -- the 4,153,461st a number -- said -- the 4,689,272nd The approach of processing by polyvinyl phosphonic acid which is indicated by each specification of a number etc. is mentioned.

[0071] There is especially no limit as said solvent. A well-known solvent, for example, ethylene dichloride, A cyclohexanone, a methyl ethyl ketone, a methanol, ethanol, Propanol, ethylene glycol monomethyl ether, 1-methoxy-2-propanol, 2-methoxy ethyl acetate, 1-methoxy-2-propyl acetate, Dimethoxyethane, methyl lactate, ethyl lactate, N,N-dimethylacetamide, N,N-dimethylformamide,

tetramethyl urea, N-methyl pyrrolidone, dimethyl sulfoxide, a sulfolane, gamma-butyrolactone, toluene, etc. are mentioned. These solvents may be used by the one-sort independent, and may mix and use two or more sorts.

[0072] As concentration in said solvent of each component (total solids containing an additive) of the image formation ingredient of said this invention, 1 - 50 % of the weight is desirable. Moreover, although it changes with applications, when using for the photosensitive printing version, generally 0.5 - 5.0 g/m² is desirable [the coverage on the base material obtained after spreading and desiccation (solid content)].

[0073] As the approach of said spreading, there is especially no limit and the well-known method of application, for example, bar coating-machine spreading, rotation spreading, a spray coating cloth, curtain spreading, DIP spreading, the Ayr knife spreading, blade spreading, roll coating, etc. are mentioned. Although apparent sensibility becomes size as the amount of said spreading decreases, the coat property of a sensitization layer falls.

[0074] In the image formation ingredient of this invention, undercoat can be prepared by request between said base materials and said sensitization layers. Various organic compounds are used as a component of said undercoat. For example, a carboxymethyl cellulose, a dextrin, gum arabic, The phosphonic acid which has amino groups, such as 2-aminoethylphosphonic acid The phenylphosphonic acid and naphthyl phosphonic acid which may have a substituent, alkyl phosphonic acid, Organic phosphonic acid, such as glycerophosphonic acid, methylene diphosphonic acid, and ethylene diphosphonic acid, Organic phosphorus acids, such as a phenyl phosphoric acid which may have a substituent, a naphthyl phosphoric acid, an alkyl phosphoric acid, and glycerophosphoric acid, Phenyl phosphinic acid, naphthyl phosphinic acid which may have a substituent, The hydrochloride of the amine which has hydroxy groups, such as amino acid, such as organic phosphinic acid, such as an alkylphosphine acid and glycerophosphinic acid, a glycine, and beta-alanine, and a hydrochloride of triethanolamine, etc. is mentioned. These may be used by the one-sort independent and may use two or more sorts together.

[0075] Said undercoat can be prepared by the following approaches. That is, it is the approach of an aluminum plate being immersed in the solution made to dissolve said organic compound in organic solvents or those partially aromatic solvents, such as an approach of applied and drying and preparing the solution made dissolving said organic compound in organic solvents or those partially aromatic solvents, such as water or a methanol, ethanol, and a methyl ethyl ketone, on an aluminum plate, and water or a methanol, ethanol, a methyl ethyl ketone, making said compound stick to it, and washing, drying and establishing bywater etc. after that etc.

[0076] In the former approach, the concentration of this organic compound in the solution in which said organic compound was dissolved has 0.005 - 10 desirable % of the weight. Moreover, in the latter approach, the concentration of this organic compound in the solution in which said organic compound was dissolved has 0.01 - 20 desirable % of the weight, and 0.05 - 5 % of the weight is more desirable, and the temperature of said immersion has desirable 20-90 degrees C, 25-50 degrees C is more desirable, and the time amount of said immersion has 0.1 seconds - 20 desirable minutes, and is more desirable. [of 2 seconds - 1 minute]

[0077] The solution in which said organic compound was dissolved is made to contain acid, such as alkalis, such as ammonia, triethylamine, and a potassium hydroxide, and a hydrochloric acid, a phosphoric acid, and pH can also be adjusted to 1-12. Moreover, a yellow color can also be added for tone reproduction nature amelioration of an image formation ingredient.

[0078] As an amount of covering of organic undercoat, 2 - 200 mg/m² is desirable, and 5 - 100 mg/m² is more desirable. said amount of covering -- said numeric value -- when out of range, sufficient print durability ability may not be obtained

[0079] Since the stability of the processing to development conditions is extended, said image formation ingredient can be made to contain an amphoteric surface active agent which is indicated by a nonionic surface active agent which is indicated by JP,62-251740,A and JP,3-208514,A, JP,59-121044,A, and JP,4-13149,A.

[0080] As said nonionic surface active agent, sorbitan tristearate, sorbitan monopalmitate, a sorbitan trioleate, a stearin acid monoglyceride, the polyoxyethylene nonylphenyl ether, etc. are mentioned. As said double-sided activator, alkyl di(aminoethyl)glycine, an alkylpolyamino ethylglycine hydrochloride, 2-alkyl-N-carboxy ethyl-N-hydroxyethyl imidazolinium betaine, N-tetradecyl-N and N-betaine mold (for example, a trade name "Amogen K": product made from the first Industry), etc. are mentioned. As a content in said image formation ingredient of said nonionic surface active agent and an amphoteric surface active agent, 0.05 - 15 % of the weight is desirable, and 0.1 - 5 % of the weight is more desirable.

[0081] Moreover, said image formation ingredient can be made to contain the color and pigment as the baked appearance electuarium and the image coloring agent for obtaining a visible image immediately after heating by exposure. The combination of the compound (photo-oxide emission agent) which emits an acid with heating by exposure as said baked appearance electuarium, and the organic dye which can form a salt can be mentioned as a representative. the combination of o-naphthoquinonediazide-4-sulfonic-acid halo GENIDO specifically indicated by each official report of JP,50-36209,A and 53-8128, and salt plasticity organic dye, and JP,53-36223,A -- said -- 54-74728 a number, 60-3626, 61-143748, and 61-151644 -- and -- said -- 63-58440 The combination of the trihalomethyl compound indicated by each official report of a number and salt plasticity organic dye can be mentioned. as this trihalomethyl compound, there are an oxazole system compound and triazine compound, and it passes through both, excels in the Tokiyasu quality, and clear -- appearance is burned and carried out and an image is given.

[0082] As a coloring agent of said image, other colors can be used in addition to the above-mentioned salt plasticity organic dye. An oil color and basic dye can be raised as a suitable color including salt plasticity organic dye. Specifically, oil yellow #101, oil yellow #103, oil pink #312, the oil green BG, oil blue BOS, oil blue #603, oil black BY, oil black BS, oil black T-505 (above product made from ORIENT Chemical industry), Victoria pure blue, a crystal violet (CI42555), Methyl Violet (CI42535), ethyl violet, rhodamine B (CI145170B), Malachite Green (CI42000), a methylene blue (CI52015), etc. can be mentioned. Moreover, especially the color indicated by JP,62-293247,A is desirable. As a content of these colors, 0.01 - 10 % of the weight is desirable to the total solids of said image formation ingredient, and 0.1 - 3 % of the weight is more desirable. Furthermore, if needed, in order to give the flexibility of a sensitization layer etc., a plasticizer is added to said image formation ingredient. For example, oligomer, a polymer, etc. of butyl-phthalyl, a polyethylene glycol, tributyl citrate, a diethyl phthalate, dibutyl phthalate, phthalic-acid dihexyl, a dioctyl phthalate, tricresyl phosphate, tributyl phosphate, trioctyl phosphate, tetrahydrofurfuryl oleate, an acrylic acid, or a methacrylic acid are used.

[0083] Image exposure and a development are usually performed to said image formation ingredient. As the light source of the activity beam of light used for said image exposure, there are a mercury-vapor lamp, a metal halide lamp, a xenon lamp, a chemical lamp, a carbon arc lamp, etc., for example. As a radiation, there are an electron ray, an X-ray, an ion beam, far infrared rays, etc. Moreover, g line, i line, Deep-UV light, and a high density energy beam (laser beam) are also used. As a laser beam, a helium neon laser, an argon laser, krypton laser, a helium cadmium laser, a KrF excimer laser, etc. are mentioned. In this invention, the light source which has luminescence wavelength in an infrared region from near-infrared is desirable, and solid state laser and especially semiconductor laser are desirable.

[0084] The alkali water solution known conventionally can be used as the developer used for said development, or a replenisher. For example, inorganic alkali salt, such as a sodium silicate, this potassium, the 3rd sodium phosphate, this potassium, this ammonium, the 2nd sodium phosphate, this potassium, this ammonium, a sodium carbonate, this potassium, this ammonium, a sodium hydrogencarbonate, this potassium, this ammonium, way acid sodium, this potassium, this ammonium, a sodium hydroxide, this ammonium, this potassium, and this lithium, is mentioned. Moreover, organic alkali chemicals, such as monomethylamine, dimethylamine, a trimethylamine, a monoethyl amine, diethylamine, triethylamine, mono-isopropylamine, diisopropylamine, a triisopropyl amine, n butylamine, monoethanolamine, diethanolamine, triethanolamine, monoisopropanolamine, diisopropanolamine, ethyleneimine, ethylenediamine, and a pyridine, are mentioned. These alkali water

solutions may be used by the one-sort independent, and may use two or more sorts together.

[0085] In these alkali water solutions, especially silicate water solutions, such as a sodium silicate and a potassium silicate, are desirable. As the reason, it is the oxidation silicon SiO_2 and the alkali-metal oxide which are the component of a silicate. An alkali-metal silicate which is because accommodation of development nature is attained with a ratio and concentration with M_2O , for example, is indicated by JP,54-62004,A and JP,57-7427,B is mentioned suitably.

[0086] A lot of PS plates can be processed suitably, without exchanging the developer in a developing tank for a long time by adding a water solution with alkali reinforcement higher than a developer (replenisher) to a developer, when said development is performed using an auto-processor.

[0087] In said developer and replenisher, various surfactants and organic solvents can be added if needed in order to raise promotion of development nature, control, distribution of development dregs, or the parent ink nature of the printing version image section. As said surface active agent, an anion system, a cation system, the Nonion system, and an amphoteric surface active agent are desirable. Furthermore, reducing agents, such as sodium salt of inorganic acids, such as hydroquinone, resorcinol, a sulfurous acid, and sulfurous-acid hydro acid, and potassium salt, and also an organic carboxylic acid, a defoaming agent, a water softener, etc. can be added to said developer and replenisher if needed.

[0088] After treatment of the image formation ingredient by which the development was carried out using said developer and replenisher is carried out with the rinse containing rinsing water, a surface active agent, etc., and the desensitization liquid containing gum arabic or a starch derivative. As after treatment in the case of using it as a printing version, said image formation ingredient can be used combining various these processings.

[0089] In recent years, in platemaking / printing industry, the auto-processor for the printing versions is widely used for rationalization of a platemaking activity, and a standardization. This auto-processor sprays and carries out the development of each processing liquid pumped up with the pump from a spray nozzle, consisting of the development section and the after-treatment section generally, consisting of the equipment, each processing cistern, and spray equipment which convey the printing version, and conveying the printing version [finishing / exposure] horizontally. Moreover, how to make carry out immersion conveyance of the printing version with a guide-among liquid roll etc. into the processing cistern with which processing liquid was filled, and process is also learned recently. It can process in such automatic processing, supplementing each processing liquid with a replenisher according to throughput, the operating time, etc. Moreover, the so-called disposable mode of processing substantially processed with intact processing liquid is also applicable.

[0090] The case where said image formation ingredient is used as a photosensitive lithography version is explained. First, when there are the image sections (for example, the remains of a film edge of a subject-copy film etc.) unnecessary for rinsing, a rinse, and/or the lithography version obtained by carrying out gum length after carrying out image exposure and developing said image formation ingredient, elimination of the unnecessary image section is performed. Such elimination is Japanese Patent Publication No. 2-13293 Although the approach of performing by rinsing after it applies to the unnecessary image section elimination liquid which is indicated by the number official report and predetermined carries out time amount neglect as it is is desirable, the approach of developing, after irradiating the activity beam of light drawn with an optical fiber which is indicated by JP,59-174842,A at the unnecessary image section can also be used.

[0091] Burning processing is performed to consider as the lithography version of much more high print-durability, although presswork can be presented with it after the lithography version obtained as mentioned above applies desensitization gum by request. the case where the burning of the lithography version is carried out -- before burning -- JP,61-2518,B -- said -- 55-28062 It is desirable to process with counter etching liquid which is indicated by each official report of a number, JP,62-31859,A, and 61-159655. The approach of immersing for it and applying the printing version as the approach into the bat which applied on the lithography version or filled counter etching liquid with sponge and the absorbent cotton into which this counter etching liquid was made to soak, spreading by the automatic coating machine, etc. are applied. Moreover, making it a squeegee, after applying, and making the coverage into

homogeneity with a squeegee roller gives a more desirable result.

[0092] Generally the coverage of counter etching liquid has desirable 0.03 - 0.8 g/m² (dry weight). The lithography version with which counter etching liquid was applied is heated by the elevated temperature by a burning processor (for example, burning processor currently sold from Fuji Photo Film Co., Ltd. : "BP-1300") etc., after drying, if required. Although whenever [stoving temperature / in this case], and time amount are based also on the class of component which forms the image, it is desirable to be carried out a grade for 1 - 20 minutes at the temperature of 180-300 degrees C.

[0093] the processing to which the lithography version by which burning processing was carried out is suitably carried out from the former, such as rinsing and gum length, if needed -- ***** -- although things are made, when the counter etching liquid containing a water soluble polymer compound etc. is used, the so-called desensitization processing of gum length etc. can be omitted. the lithography version obtained by such processing is covered over the offset press etc. -- having -- many -- it is used for printing of several sheets.

[0094]

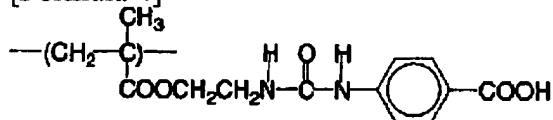
[Example] Hereafter, although this invention is explained according to an example, the range of this invention is not limited to these examples at all.

[0095] [Composition of (A) alkali water-solution fusibility resin]

Synthetic - methacryloiloxy-ethyl isocyanate 15.5g of the high molecular compound containing a <composition of synthetic example 1:(A) alkali water-solution fusibility resin 1>-polymerization nature monomer, and after adding and dissolving 15.0g of 4-aminobenzoic acids in 150g of dioxane solvents, this was stirred for 2 hours and 2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate 28.0g which has the following configuration unit was obtained.

[0096]

[Formula 4]

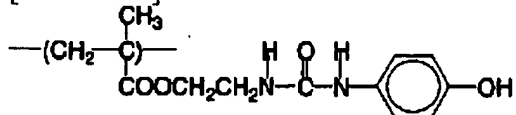


[0097] - Composition of (A) alkali water-solution fusibility resin 1 - Obtained 2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate, N-phenyl maleimide (compound which has the unsaturated bond in which one or more polymerizations are possible, and does not include an urea bond) The weight ratio (2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate / N-phenyl maleimide) carried out the polymerization at 75/25 of a rate, and obtained 20g of (A) alkali water-solution fusibility resin 1 (weight-average-molecular-weight (Mw) = 15,000).

[0098] In composition of the high molecular compound containing the polymerization nature monomer of the example 1 of <composition of synthetic example 2:(A) alkali water-solution fusibility resin 2> composition, the outside which set methacryloiloxy-ethyl isocyanate to 15.5g, set 4-aminophenol to 12.0g, and set the dioxane solvent to 140g obtained 2-(N'-(4-hydroxyphenyl) ureido) ethyl methacrylate 25.0g which has the following configuration unit like the synthetic example 1.

[0099]

[Formula 5]



[0100] Next, in composition of the alkali water-solution fusibility resin 1 of the synthetic example 1, the outside which used 2-(N'-(4-hydroxyphenyl) ureido) ethyl methacrylate obtained above as a high molecular compound containing a polymerization nature monomer obtained 20g of (A) alkali water-solution fusibility resin 2 (weight-average-molecular-weight (Mw) = 16,000) like the synthetic example 1.

[0101] In composition of (A) alkali water-solution fusibility resin 1 of the example 1 of <composition of synthetic example 3:(A) alkali water-solution fusibility resin 3> composition N-phenyl maleimide and methacrylamide are used as a compound which does not include an urea bond. The outside as for which the weight ratio (2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate / N-phenyl maleimide / methacrylamide) carried out the polymerization at a rate of 75/13/12 20g of (A) alkali water-solution fusibility resin 3 (weight-average-molecular-weight (Mw) =34,000) was obtained like the synthetic example 1.

[0102] In composition of (A) alkali water-solution fusibility resin 2 of the example 2 of <composition of synthetic example 4:(A) alkali water-solution fusibility resin 4> composition A methyl methacrylate and methacrylamide are used as a compound which does not include an urea bond. The outside as for which the weight ratio (2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate / methyl methacrylate / methacrylamide) carried out the polymerization at a rate of 72/14/14 20g of (A) alkali water-solution fusibility resin 4 (weight-average-molecular-weight (Mw) =68,000) was obtained like the synthetic example 2.

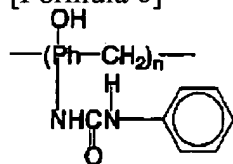
[0103] In composition of (A) alkali water-solution fusibility resin 2 of the example 2 of <composition of synthetic example 5:(A) alkali water-solution fusibility resin 5> composition Acrylonitrile and methacrylamide are used as a compound which does not include an urea bond. The outside as for which the weight ratio (2-(N'-(4-carboxyphenyl) ureido) ethyl methacrylate / methyl methacrylate / methacrylamide) carried out the polymerization at a rate of 65/20/15 20g of (A) alkali water-solution fusibility resin 5 (weight-average-molecular-weight (Mw) =45,000) was obtained like the synthetic example 1.

[0104] After adding and dissolving 11.9g of <composition of synthetic example 6:(A) alkali water-solution fusibility resin 6> phenyl isocyanates, and 4-aminophenol 12.0g in 120g of dioxane solvents, it was made to stir for 2 hours and 4-(N'-phenyl ureido) phenol 22.0g was obtained.

[0105] After dissolving obtained 4-(N'-phenyl ureido) phenol 18.3g and paraformaldehyde 2.40g in 100g of oxalic acid and stirring this, it heated at 100 degrees C and 20g of (A) alkali water-solution fusibility resin 6 (weight-average-molecular-weight (Mw) =2,000) expressed with the following structure expression was obtained.

[0106]

[Formula 6]



[0107] n is 1-15 among said structure expression, and Ph in () is the benzene ring.

[0108] After washing the aluminum plate (quality of the material 1050) with a [production of base material A] thickness of 0.3mm by the trichloroethylene and degreasing, this front face was grained using a nylon brush and the PAMISU-water suspension of 400 meshes, and it often washed with water. It etched by being immersed in a sodium-hydroxide water solution for 9 seconds 25 45-degree C%, and it was immersed in the nitric acid for 20 seconds 20 more% after rinsing, and this plate was rinsed. The amounts of etching on the front face of graining at this time were about 3g/m2. Next, after preparing the direct-current anodized coating of 3 g/m2 by current density 15 A/dm2, having used the sulfuric acid as the electrolytic solution for this plate 7%, it rinsed and dried, and further, the following under coat liquid was applied, the paint film was dried at 90 degrees C for 1 minute, and the base material A with which the under coat was prepared was obtained. The coverage of the paint film after desiccation was 10 mg/m2.

[0109]

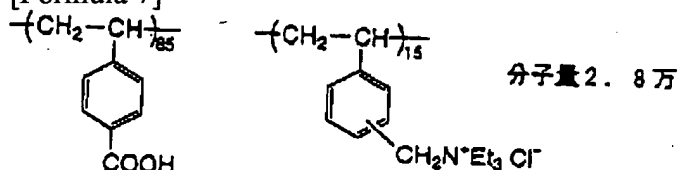
- Under coat liquid - and beta-alanine 0.5g and methanol 95g and water 5g [0110] After washing the aluminum plate (quality of the material 1050) with a [production of base material B] thickness of 0.3mm

by the trichloroethylene and degreasing, this front face was grained using a nylon brush and the PAMISU-water suspension of 400 meshes, and it often washed with water. It etched by being immersed in a sodium-hydroxide water solution for 9 seconds 25 45-degree C%, and it was immersed in the nitric acid for 20 seconds 20 more% after rinsing, and this plate was rinsed. The amounts of etching on the front face of graining at this time were about 3g/m². Next, after preparing the direct-current anodized coating of 3 g/m² by current density 15 A/dm², having used the sulfuric acid as the electrolytic solution for this plate 7%, it processed for 10 seconds at 30 degrees C with the 2.5 % of the weight water solution of specific silicates, the following under coat liquid was applied, the paint film was dried for 15 seconds at 80 degrees C, and the base material B with which the under coat was prepared was obtained. The amount of covering of the paint film after desiccation was 15 mg/m².

[0111]

- Under coat liquid - and the following compound 0.3g and methanol 100g and water 1g [0112]

[Formula 7]



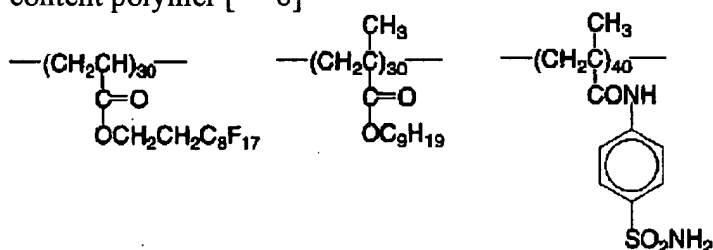
[0113] (Example 1) The sensitization liquid which contains the following component in the obtained base material A was applied so that coverage might serve as 1.3 g/m², and the lithography version was obtained.

[0114]

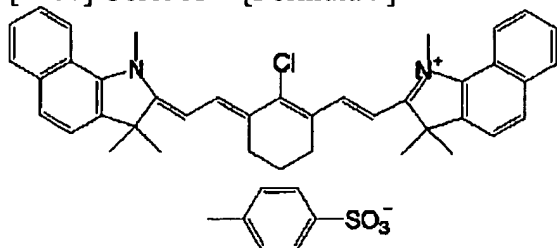
- Fluorine content polymer expressed with sensitization liquid - and the following structure expression (A) alkali water-solution fusibility acquired in 0.03g and the synthetic example 1 0.20g Resin 1andm, p-cresol novolak (4, weight-average-molecular-weight =3,500, 0.5 % of the weight content of 6/ 0.80g m and p ratio = unreacted KURE ZORU)

- P-toluenesulfonic acid 0.003g and tetrahydro phthalic anhydride The color A expressed with 0.03g and the following structure expression It is the counter ion of 0.017g and the Victoria pure blue BOH 1-0.015g The color and megger fuck F-177 (the product made from Dainippon Ink & Chemicals 0.05g , fluorochemical surfactant) made into the naphthalene sulfonic acid anion

- gamma-butyl lactone 10g and methyl ethyl ketone 10g and 1-methoxy-2-propanol 8g [0115] Fluorine content polymer [** 8]



[0116] Color A -- [Formula 9]



[0117] - Evaluation of print durability - The obtained lithography version was exposed using the

photographic filter (Trendsetter, product made from Creo) (laser power: 8.0W, number of rotations: 140rpm), and the development was performed for 12 seconds at 30 degrees C using the auto-processor (LP-900H, Fuji Photo Film Co., Ltd. make) and the developer (LH-DP (1:7.8 dilution)). Then, said lithography version was printed with the printing machine (Hy Dell KOR-D machine). In addition, for every 5000-sheet printing, printing was a cleaner (plate cleaner CL-1, Fuji Photo Film Co., Ltd. make), and it was performed, wiping said lithography printing plate. Printing number of sheets estimated the print durability at this time. In addition, said print durability judged by viewing and the maximum printing number of sheets which can maintain the image quality in early stages of printing estimated it. It can be said that it is usually satisfactory when using it practically if said print durability is about 50000 sheets. The result was shown in Table 1.

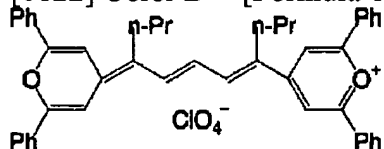
[0118] (Example 2) In the example 1, the outside which used (A) alkali water-solution fusibility resin 2 obtained in the synthetic example 2 instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0119] (Example 3) In the example 1, the outside which used (A) alkali water-solution fusibility resin 3 obtained in the synthetic example 3 instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0120] (Example 4) In the example 1, the outside which used (A) alkali water-solution fusibility resin 4 obtained in the synthetic example 4 instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0121] (Example 5) In an example 1, instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 Using (A) alkali water-solution fusibility resin 5 obtained in the synthetic example 5, the outside which used the color B expressed with the following structure expression instead of the color A expressed with said structure expression produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0122] Color B -- [Formula 10]



[0123] (Example 6) In the example 1, the outside which used (A) alkali water-solution fusibility resin 6 obtained in the synthetic example 6 instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0124] (Example 7) Instead of being the base material A with which the under coat was prepared in an example 1 Instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 using the base material B with which the under coat was prepared Using (A) alkali water-solution fusibility resin 3 obtained in the synthetic example 3, the outside which used the color B expressed with said structure expression instead of the color A expressed with said structure expression produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0125] (Example 8) Instead of being the base material A with which the under coat was prepared in an example 1 The outside which used (A) alkali water-solution fusibility resin 6 obtained in the synthetic example 6 instead of (A) alkali water-solution fusibility resin 1 obtained in the synthetic example 1 using the base material B with which the under coat was prepared The lithography version was produced like the example 1 and print durability was evaluated like the example 1. The result was shown in Table 1.

[0126] (Example 1 of a comparison) In the example 1, instead of 0.20g of the alkali water-solution

fusibility resin 1 obtained in the synthetic example 1, the outside which used 1.0g of m and a p-cresol novolak produced the lithography version like the example 1, and evaluated print durability like the example 1. The result was shown in Table 1.

[0127] (Example 2 of a comparison) Instead of being the base material A with which the under coat was prepared, instead of 0.20g of the alkali water-solution fusibility resin 1 obtained in the synthetic example 1, the outside which used 1.0g of m and a p-cresol novolak produced the lithography version like the example 1, and evaluated print durability like the example 1 in the example 1 using the base material B with which the under coat was prepared. The result was shown in Table 1.

[0128]

[Table 1]

	耐刷性の評価 (印刷枚数(枚))
実施例1	80000
実施例2	75000
実施例3	85000
実施例4	90000
実施例5	80000
実施例6	75000
実施例7	95000
実施例8	85000
比較例1	40000
比較例2	45000

[0129] Since it excels in print durability even if a cleaner is repeated and used for the image formation ingredient of this invention, Table 1 shows excelling in chemical resistance and print durability.

[0130]

[Effect of the Invention] According to this invention, the positive type image formation ingredient for infrared laser for direct platemaking which is excellent in chemical resistance and print durability can be offered.

[Translation done.]